



NON-TITLE V TECHNICAL SUPPORT DOCUMENT

PERMIT NUMBER: 040136
BUSINESS NAME: Hickman's Egg Ranch
SOURCE TYPE: Poultry Egg Production
PERMIT ENGINEER: Sara Seuberling

App. ID(s): 408551
Revision(s): 2.0.2.0
Revision Type(s): Minor Modification
Date Prepared: 08/20/2015

BACT: No **MACT:** Yes **NSPS:** Yes **SYNTH MINOR:** No **AIRS:** No
DUST PLAN REQUIRED: No **DUST PLAN RECEIVED:** No
O&M PLAN REQUIRED: No **O&M PLAN RECEIVED:** No
PORTABLE SOURCE: No **SITE VISIT:** 08/19/2015

PROCESS DESCRIPTION:

This facility houses chickens for the production of eggs for human consumption. Each barn is equipped with an emergency generator to power fans during an electrical outage. These generators emit products of combustion while in operation, such as carbon monoxide (CO), nitrogen oxides (NOx), particulate matter (PM), volatile organic compounds (VOC), and sulfur oxides (SOx). A propane-fueled manure dryer also creates products of combustion. A crematory is located on-site for the disposal of chicken carcasses but is not currently connected to a fuel source. Non-resale gasoline is stored and dispensed on-site, which emits VOC.

PM is produced from an on-site feed mill, manure drying, composting, feed delivery, unpaved roads, and unpaved parking lots. However, Eric Massey, director of the Air Quality Division at the Arizona Department of Environmental Quality (ADEQ), agreed that all of these operations are considered agricultural practices and are therefore subject to Best Management Practices (BMPs) under A.R.S. 49-457 rather than County Rules 310 and 311. BMPs are regulated by ADEQ rather than Maricopa County, so conditions regarding those operations are excluded from the permit.

PERMIT HISTORY:

| Date Received | Revision Number | Description |
|---------------|-----------------|---|
| 10/15/2004 | 0.0.0.0 | Submitted application for new permit to operate a crematory and emergency generators at the egg farm. |
| 03/09/2011 | 0.0.1.0 | Minor modification requested to add emergency generators and gasoline storage to the equipment list. |
| 03/10/2011 | 1.0.0.0 | Submitted permit renewal application. |
| 10/11/2011 | 0.0.2.0 | Minor modification requested to add a feed mill to the facility |
| 12/07/2011 | 1.0.1.0 | Minor modification requested to install a grain receiving and storage operation at the facility. |
| 05/20/2013 | 1.0.2.0 | Minor modification requested to add three emergency generators to the equipment list. |
| 06/24/14 | 2.0.0.0 | Submitted permit renewal application. |
| 06/24/14 | 2.0.1.0 | Minor modification requested to add three emergency generators to the equipment list. |
| 07/20/2015 | 2.0.2.0 | Minor modification requested to add a 15 MMBtu/hr propane-fueled rotary dryer for manure processing along with a 15,000 propane tank. The Permittee also requested the equipment list to be updated with a replacement emergency generator. Requirements for the feed mill were removed since they are regulated under BMPs enforced by ADEQ. |

PURPOSE FOR APPLICATION:

Minor modification to install a rotary dryer with baghouse to process chicken manure, remove requirements for feed operations, and replace a 1998 model year generator with a 2015 model year generator.

A. APPLICABLE COUNTY REGULATIONS:

Rule 100: General Provisions and Definitions
Rule 200: Permit Requirements
Rule 220: Non-Title V Permit Provisions
Rule 280: Fees: Table C (Emergency generators and non-resale gasoline storage)
Rule 314: Open Outdoor Fires
Rule 320: Odors & Gaseous Air Pollutants
Rule 324: Stationary Internal Combustion Engines
Rule 353: Gasoline in Stationary Dispensing Tanks

Per Rule 353 §305.2, the gasoline storage tank is exempt from all requirements of Rule 353 except for cap, spills and liquid leakage provisions in §301 of that rule since the gasoline stored at the facility is used for normal farm operations.

Note: The 15 MMBtu/hr dryer is not subject to Rule 323 since it does not fit any of the applicable equipment types listed in Rule 323 §102.

Note: Rules 310 and 311 do not apply to this facility since the Permittee is following BMPs regulated by ADEQ. Under A.R.S. 49-457, agricultural activities, including poultry farms, are subject to BMPs for the control of particulate emissions.

B. APPLICABLE FEDERAL REGULATIONS:

40 CFR 60 Subpart IIII (Standards of Performance for Stationary Compression Ignition ICE) applies to each diesel-fueled generator manufactured after 4/1/06.

40 CFR 63 Subpart ZZZZ (NESHAP for Stationary RICE) applies to each engine not subject to 40 CFR 60 Subpart IIII.

40 CFR 63 Subpart CCCCCC (NESHAP for Gasoline Dispensing Facilities) applies to the gasoline storage tank. Since the gasoline throughput is less than 10,000 gallons per month, only gasoline handling requirements from 40 CFR §63.11115 and 63.11116 apply. Requirements for a submerged fill pipe and a vapor balance system are reserved for larger facilities.

Non-Applicable Federal Regulations

40 CFR 60 Subpart DD (Standards of Performance for Grain Elevators) does not apply to the facility since the grain storage and processing operations do not meet the definition of grain terminal elevator or grain storage elevator provided in 40 CFR 60.301. Grain terminal elevators do not include those located at livestock feedlots. None of the feed is meant for human consumption so dry corn milling does not meet the definition of grain storage elevator.

40 CFR 63 Subpart DDDDDDD (NESHAP for Area Sources: Prepared Feeds Manufacturing): This facility is primarily engaged in raising/feeding chickens so it is not classified as a prepared feed manufacturing facility, per 40 CFR 63.11627. If this facility was considered a prepared feed manufacturing facility, it would most likely be subject to this Subpart since a material used in the feed contains manganese in excess of 1.0% by weight.

C. AIR POLLUTION CONTROL EQUIPMENT/EMISSION CONTROL SYSTEM(s):

| System description | Quantity | Comments: |
|-----------------------|----------|---|
| Rotory Dryer Baghouse | 1 | Controls particulate emissions from the rotary dryer. It is regulated by ADEQ under agricultural BMPs rather than the Control Officer. |
| Corn Grinder | 1 | The grinder is self-contained to reduce particulate emissions. It is regulated by ADEQ under agricultural BMPs rather than the Control Officer. |

| | | |
|------------|---|---|
| Feed Mixer | 1 | The mixer is self-contained to reduce particulate emissions. It is regulated by ADEQ under agricultural BMPs rather than the Control Officer. |
|------------|---|---|

D. EMISSIONS:

FACILITY WIDE ALLOWABLE EMISSIONS

| Pollutants | Engines | Dryer | Gasoline Storage | Facility wide Daily Emissions* | Facility wide Annual Emissions |
|------------|---------------|--------------|------------------|--------------------------------|--------------------------------|
| CO: | 22,653 lbs/yr | 2,558 lbs/yr | | 10 lbs | 25,212 lbs |
| NOx: | 45,435 lbs/yr | 4,435 lbs/yr | | 17 lbs | 49,869 lbs |
| PM2.5: | 2,767 lbs/yr | 239 lbs/yr | | 1 lb | 3,005 lbs |
| PM10: | 2,767 lbs/yr | 239 lbs/yr | | 1 lb | 3,005 lbs |
| VOC: | 6,146 lbs/yr | 273 lbs/yr | 4,800 lbs/yr | 15 lbs | 11,219 lbs |
| SOX: | 463 lbs/yr | 7 lbs/yr | | 1 lb | 470 lbs |

*Daily emissions exclude emissions from the emergency engines.

E. HAP EMISSION IMPACTS:

Based on the information provided in the permit application, the facility emits insignificant amount of HAPs ; therefore, SCREEN modeling was not performed per the Department's HAPs policy.

F. PERFORMANCE TESTING:

Testing is not required for this facility at this time.

G. REGULATORY REQUIREMENTS AND MONITORING:

Condition 1 states that the Permittee must submit a permit revision before reconnecting the crematory to a fuel source. The facility was previously permitted for a crematory but it is no longer used.

Condition 2 was included since the facility was issued an NOV for a mulch fire 03/07/14.

Conditions 3-5 were taken from Rule 320 and were included due to the potential for odors from manure handling and composting operations.

Conditions 6-15 are based on the most current template for emergency engines subject to Rule 324, NSPS IIII and 40 CFR 63 Subpart ZZZZ. The operating limit was set at 355 hours per year to keep the facility from exceeding the BACT threshold for annual NOx emissions of 25 tons/yr.

Conditions 16-20 regulate the non-retail gasoline storage tank, which is subject to Rule 353 §301 and 40 CFR 63 Subpart CCCCCC. Condition 17 contains throughput limits and a restriction to only fuel farm implements to keep the facility from becoming subject to submerged fill pipe and vapor balance requirements.

Conditions 21-22 regulate the manure dryer and were included to keep the facility from exceeding any applicable threshold, such as BACT.

APPENDIX



040136 Emission
Worksheet

Propane-Fueled Equipment Emissions

Emissions from the rotary dryer are calculated below using EPA emission factors from AP-42. The application included both operating times and fuel usage so emissions were calculated separately based on operating time and fuel usage for comparison purposes.

Input rating of equipment

| | |
|-------|----------------|
| 1) | 15.0 MM Btu/hr |
| 2) | 0.0 |
| 3) | 0.0 |
| Total | 15.0 MM Btu/hr |

Emission factors (AP-42 Table 1.5-1)

Constants

| | | | |
|--------|--|----------------|-----------------------|
| CO: | 7.5 lb/1000 gal | 91,500 btu/gal | (AP-42 Section 1.5-1) |
| NOx: | 13 lb/1000 gal | 8 hr/day | |
| PM10: | 0.7 lb/1000 gal | 260 day/yr | |
| PM2.5: | 0.7 lb/1000 gal | | |
| VOC: | 0.8 lb/1000 gal | | |
| SOx | 0.02 lb/1000 gal (Emissions Inventory) | | |

Emissions Based on Operating Hours:

| | | |
|--------|--------------|--------------|
| CO: | 9.8 lbs/day | 2,558 lbs/yr |
| NOx: | 17.0 lbs/day | 4,433 lbs/yr |
| PM10: | 0.9 lbs/day | 239 lbs/yr |
| PM2.5: | 0.9 lbs/day | 239 lbs/yr |
| VOC: | 1.0 lbs/day | 273 lbs/yr |
| SOx | 0.0 lbs/day | 7 lbs/yr |

Propane usage limit (from application): 341,120 gals/yr

Emissions Based on Fuel Usage:

| | |
|--------|-------------|
| CO: | 2558 lbs/yr |
| NOx: | 4435 lbs/yr |
| PM10: | 239 lbs/yr |
| PM2.5: | 239 lbs/yr |
| VOC: | 273 lbs/yr |
| SOx | 7 lbs/yr |

Emission Worksheet for New Diesel Engines

355 annual hours of operation

1 KW= 1.341 HP

40 CFR 89 Non-Road Diesel Engine Standards

| Rated Power | Emission Standard | Emission Factors (g/kw-hr) | | | |
|-------------|-------------------|----------------------------|------------|-----|-----|
| | | CO | NMHC + NOx | PM | HC |
| 130≤kW<560 | Tier 3 | 3.5 | 4 | 0.2 | 1.3 |
| kW>560 | Tier 2 | 3.5 | 6.4 | 0.2 | 1.3 |

Cummins QSL9-G7 NR3 Manufacturer's Specifications

| | |
|------|-----------|
| NOx: | 1306 g/hr |
| VOC: | 32 g/hr |

Emissions

Except as noted, CO, NOx and PM10 emission factors are set at the appropriate emission standards for non-road diesel engines specified in 40 CFR 89.112. VOC emissions are set at the Tier 1 limit since Tier 3 standards consist of NOx plus non-methane hydrocarbons rather than VOC alone. The SOx factor was taken from AP-42 Table 3.4-1 and is based on the sulfur content of diesel fuel burned in the engines.

| | Emission Factors | Factor Source |
|------|------------------|---------------|
| SOx: | 0.0001 lbs/hp-hr | AP-42 |

| I.D. # | Power (HP) | Engine Year | Emission Standard | Emissions (lbs/yr) | | | | |
|--------|------------|-------------|-------------------|--------------------|--------|------|-------|------|
| | | | | CO | NOx: | PM10 | VOC: | SOx: |
| G-1 | 755 | 2010 | Tier 2 | 1,542 | 2,820 | 88 | 573 | 33 |
| G-10 | 310 | 2007 | Tier 3 | 633 | 724 | 36 | 235 | 13 |
| G-11 | 352 | 2007 | Tier 3 | 719 | 822 | 41 | 267 | 15 |
| G-12 | 685 | 2008 | Tier 3 | 1,399 | 1,599 | 80 | 520 | 30 |
| G-13 | 422 | 2008 | Tier 3 | 862 | 985 | 49 | 320 | 18 |
| G-14 | 422 | 2008 | Tier 3 | 862 | 985 | 49 | 320 | 18 |
| G-15 | 237 | 2008 | Tier 3 | 484 | 553 | 28 | 180 | 10 |
| G-16 | 422 | 2008 | Tier 3 | 862 | 985 | 49 | 320 | 18 |
| G-17 | 422 | 2010 | Tier 3 | 862 | 985 | 49 | 320 | 18 |
| G-18 | 422 | 2010 | Tier 3 | 862 | 985 | 49 | 320 | 18 |
| G-19 | 422 | 2010 | Tier 3 | 862 | 985 | 49 | 320 | 18 |
| G-20* | 464 | 2012 | Tier 3 | 948 | 1,022 | 54 | 25 | 20 |
| G-21* | 464 | 2012 | Tier 3 | 948 | 1,022 | 54 | 25 | 20 |
| G-22* | 464 | 2012 | Tier 3 | 948 | 1,022 | 54 | 25 | 20 |
| G-23* | 464 | 2012 | Tier 3 | 948 | 1,022 | 54 | 25 | 20 |
| G-24* | 464 | 2012 | Tier 3 | 948 | 1,022 | 54 | 25 | 20 |
| G-25* | 464 | 2012 | Tier 3 | 948 | 1,022 | 54 | 25 | 20 |
| G-39* | 464 | 2015 | Tier 3 | 948 | 1,022 | 54 | 25 | 20 |
| FM1 | 324 | 2010 | Tier 3 | 662 | 756 | 38 | 246 | 14 |
| Total: | 8443 | | | 17,246 | 20,343 | 986 | 4,114 | 364 |

*Emission rates for NOx and VOC are based on the engine manufacturer's specification sheet.

Emission Worksheet for Old Diesel Engines

| I.D. # | Power (HP) |
|--------------|--------------|
| G-2 | 380 |
| G-4 | 380 |
| G-5 | 380 |
| G-6 | 380 |
| G-7 | 380 |
| G-9 | 380 |
| TOTAL | 2,280 |

355 annual hours of operation

0.015% S, allowable sulfur content in fuel

SOx = 0.00809(S) AP-42 Table 3.4-1

Emission factors (AP-42 Table 3.3-1)

CO: 0.0067 lbs/hp-hr
 NOx: 0.0310 lbs/hp-hr
 PM10: 0.0022 lbs/hp-hr
 PM: 0.0022 lbs/hp-hr
 VOC: 0.0025 lbs/hp-hr
 SOx: 0.0001 lbs/hp-hr

Combustion Emissions

| | Old Generators | New Generators | Propane Dryer | Total Emissions |
|--------|----------------|----------------|---------------|-----------------|
| CO: | 5,407 lbs/yr | 17,246 lbs/yr | 2,558 lbs/yr | 25,212 lbs/yr |
| NOx: | 25,092 lbs/yr | 20,343 lbs/yr | 4,435 lbs/yr | 49,869 lbs/yr |
| PM10: | 1,781 lbs/yr | 986 lbs/yr | 239 lbs/yr | 3,005 lbs/yr |
| PM2.5: | 1,781 lbs/yr | 986 lbs/yr | 239 lbs/yr | 3,005 lbs/yr |
| VOC: | 2,032 lbs/yr | 4,114 lbs/yr | 273 lbs/yr | 6,419 lbs/yr |
| SOX: | 99 lbs/yr | 364 lbs/yr | 7 lbs/yr | 470 lbs/yr |

Gasoline Storage Tanks Worksheet:

Maximum throughput

| | |
|---------|---------------|
| 120,000 | gallons/year |
| 10,000 | gallons/month |

Aboveground Tank VOC Emission Rate: **40 lbs/1000 gal.**
 (Emissions Inventory Instruction Sheet)

VOC Emissions

| | | |
|----------|--------------------|-----------------------------|
| Daily: | 14 lbs VOC/day | Based on 30 days per month. |
| Monthly: | 400 lbs VOC/mo. | |
| Yearly: | 4,800 lbs VOC/year | |



NON-TITLE V COMPLETENESS DETERMINATION CHECKLIST

Items 1-15 Front page: Items 1 to 15 (14 for Renewals) must be completed.

Notes to engineer:

- *For renewal applications the source must either answer 'No' to questions 2-5 or submit an application for a permit modification.*
- *Item 8: Many applicants do not know the SIC code or NAICS code for their industry. For a new application the code can be obtained by doing an on-line search. <http://www.osha.gov/pls/imis/sicsearch.html>*
- *Items 5, 7 and 14: These may be the same for many applicants.*

Complete: ☒ Incomplete: ☐

Item 16: A simple site diagram has been included, preferably on a standard size paper. Detailed blueprints or construction drawings are not required.

Complete: ☐ Incomplete: ☐ N/A: ☒

Item 17: A simple process flow diagram on a standard size paper is preferred. A process flow diagram may not be needed for some small businesses.

Complete: ☐ Incomplete: ☐ N/A: ☒

Item 18: An O&M plan is required only for a control device. An O&M plan is not required for a spray booth. Instead of including the O&M plan with the application, an applicant may submit it after receiving the permit.

Complete: ☐ Incomplete: ☐ N/A: ☒

Item 19: A dust control plan, if required, must accompany the permit application. The plan will be reviewed and approved by the dust compliance group.

Complete: ☐ Incomplete: ☐ N/A: ☒

Item 20: The applicant needs to complete only those sections of the permit application that are applicable.

Complete: ☒ Incomplete: ☐ N/A: ☐

Notes to engineer:

- *Concerning Section Z: Many applicants will not be able to perform these engineering calculations. We will accept the permit application with a blank Section Z.*

Instructions for completing Sections A, B, C, D, E-1, E-2, F, G, H, I, J, K-1, K-2, K-3, K-4, L, M, X-1, X-2, Y and Z of the permit application are included at the beginning of each section and are self-explanatory.

In general, a material safety data sheet (MSDS) is required for each chemical used, stored or processed at the facility. Exceptions are for very common materials, such as gasoline, diesel, acetone, etc.

Business name: Hickman's Egg Ranch

Permit number: 040136

Completeness review completed.

Application determined to be:

Complete: ☒ Incomplete: ☐

Permit Engineer: Sara Seuberling

Date: 7/29/2014